Air-deployable profiling floats

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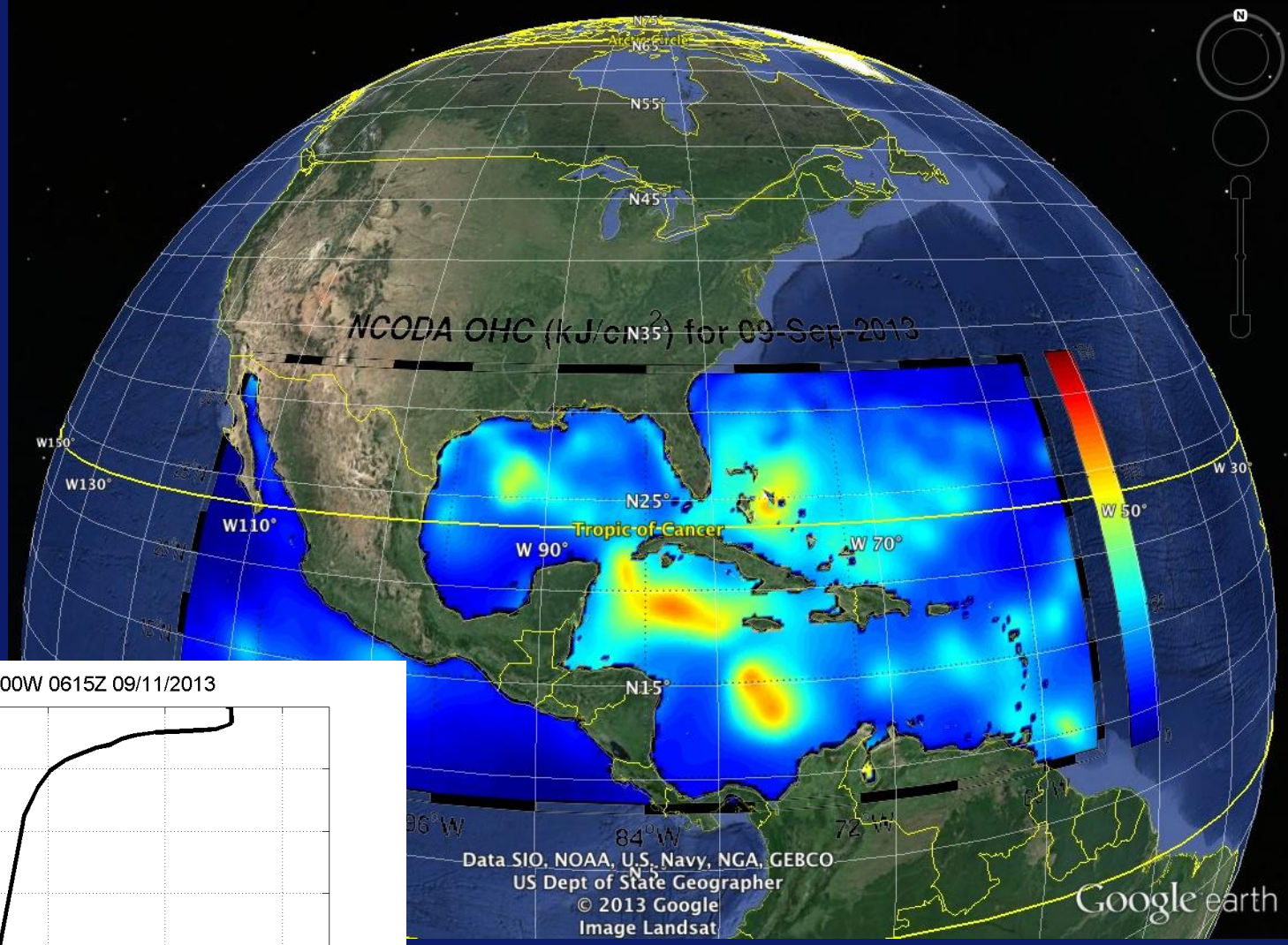
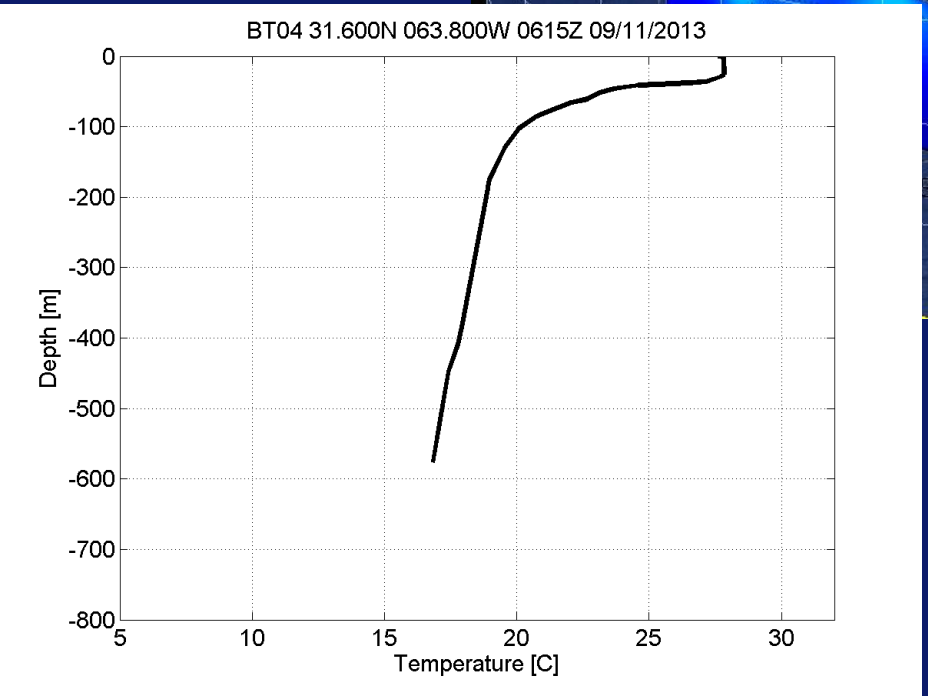
Airborne eXpendable BathyThermograph

- Goal is to develop replacement for AXBT
- Currently the AXBT serves the purpose of measuring ocean temperature as a function of depth from aircraft.
- One profile per probe, nominally to 400 m (or 1000 m)
- Slight depth error due to uncertainty in the fall rate.
- They require receiver equipment (VHF) on the plane and a human operator to record their data.
- They are a primary means of providing real-time thermal structure observations in hurricane regions ahead of storms.

See Sanabia, *et al.*, 2013, *Weather and Forecasting,* **28**, 1404–1422.

NCODA ocean heat content





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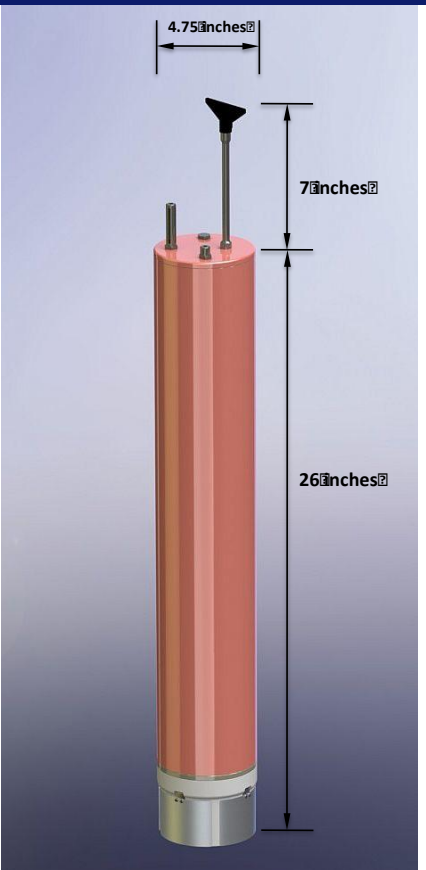
Air-deployed profiling floats

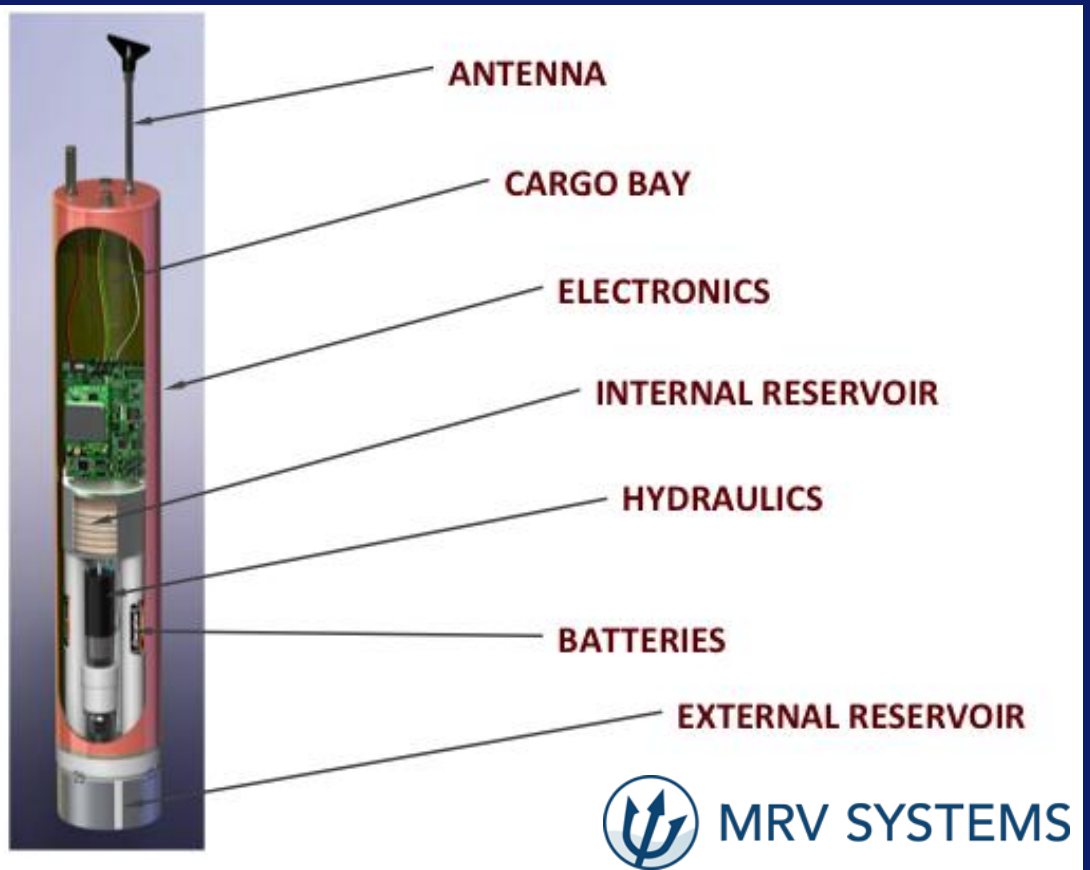
The current version of air-deployable floats requires that the rear cargo door of the plane be opened, as was done in the ONR-sponsored C-BLAST and ITOP programs.

ALAMO

Smaller Argo-style profiling float that will fit in the AXBT launcher and can be launched by the NOAA and USAF Hurricane Hunters planes.

Advantages include: multiple profiles, more sensors (salinity & accelerometer for surface waves), no VHF receiver equipment on planes, & data goes automatically in near-real time to GTS.





- A-sized case
- Weight ~10 kg
- 100–150 profiles
- 2000-meter depth rating
- 1-2 dbar bin-averaged data
- Iridium data communication

Data considerations

- Should data from air-deployed (or other micro) profiling floats be included in the Argo GDAC?
- Mission plan upon deployment is for daily profiles to 1000 dbar but could be set to longer cycle-times after hurricane season.
- Our plan is that data will go onto the GTS in near-realtime
- Data-stream from microfloats will be compatible with file formats currently used by WHOI for submission of Iridium S2A float data to the DAC.
- Initially ALAMO floats will have temperature and pressure (along with accelerometer data at the surface)
- Later ALAMO floats will have conductivity (RBR inductive) for salinity